THE ACTIVITIES OF THE CANADIAN ARCTIC EXPEDITION FROM OCTOBER, 1916, TO APRIL, 1918*

By VILHJÁLMUR STEFÁNSSON

[With separate map, Pl. XVIa, facing p. 368.]

The *Polar Bear,* one of the vessels of the Northern Division of the Canadian Arctic Expedition, wintered in 1915-1916, it will be remembered, half way up Prince of Wales Straits, between Victoria and Banks Islands. It was correctly reported by Dr. Anderson, Mr. Wilkins, and other members of our expedition on their return south in 1916, that my intention was to have the *Polar Bear* return home by Melville Island and thence by the well-sailed eastern route to the St. Lawrence. As will appear later, this was never attempted.

While it had not occurred to me that the *Polar Bear* might fail to attempt coming, I fortunately realized clearly enough that one thing or another might frustrate the best-meant attempt. We should then not only have to winter in Melville Island on the native resources of that country; but, if we did not want to waste also that part of the following spring which precedes navigation, we should have to get ready to do the work of 1917 on meat only, or at least mainly. True, I knew of the large food caches left on the south coast of Melville Island by former explorers, but I was so much impressed with the danger of scurvy and with the anti-scorbutic value of fresh meat that I should have been more at ease in my mind had I not known those caches were there. In my experience men are healthy and contented when they know that all foods but meat are out of the question, but healthy and discontented if they know of other things they might be eating if they were only allowed. In order, then, to provide fresh meat against the dark period of winter and dried meat and fat for food and fuel on the ice trip of 1917, I asked Storkersen with eight Eskimos to spend the summer of 1916 in Melville Island putting up meat. It proved that they dried for sled rations the meat of over ninety muskoxen and thirty seals, with several bears and a few reindeer; in the

* The following account was sent to the *Geographical Review* by Stefánsson from St. Stephen's Hospital, Fort Yukon, Alaska, under date of June 17, 1918. It was written by the author as a continuation of the narrative of his activities published in the March *Review* (Vol. 5, 1918, pp. 238-241), which he had just read, and carries the record from October, 1916, to the spring of 1918, when he was rapidly convalescing from the attack of typhoid with which he had been stricken in the Mackenzie delta the January before. The important advance into the polar sea from the first newly discovered island, briefly mentioned in the *Review* note on the basis of the meager newspaper accounts of the time, is, among other matters, here dealt with fully. Because of his illness the author was unable to bring with him any of the expedition records; he, therefore, wishes to state that dates and geographical positions cannot be relied on to be more than approximately correct.

The map which accompanied the note in the March *Review* is republished with the present article (Pl. XVIa), revised and amplified to bring it up to date.—EDIT. NOTE.

latter part of summer they killed for clothes and meat over sixty reindeer and about half a hundred additional muskoxen. More could easily have been killed, but this was considered enough.

Winter Quarters on Melville Island

During the winter of 1916-1917 we maintained two camps on Melville Island. The southern, with Storkersen in charge, was on the Dundas Peninsula side of Liddon Gulf about 15 miles northeast of Cape James Ross and a mile inland; the northern, an advance base in charge of Aarnaut Castel, was on the coast just west of Cape Grassy, Hecla and Griper Bay. The location of both camps was determined by the finding of bituminous coal; at Cape Grassy only, however, was the supply good in quality, abundant, and of easy access. At Cape Grassy mineral oil, or asphalt, was also found.

The chief business of the winter was sledding dried meat and fat from Liddon Gulf, where the animals were killed, to Cape Grassy, about 150 traveling miles from the southern camp. But because of the non-arrival of the *Polar Bear* we were seriously handicapped in the dark-days travel by lack of lanterns and kerosene both for light and cooking. Instead we had to use seal oil and coal, neither of which is convenient in comparison with kerosene or alcohol. The shoeing of our sleds was also nearly worn out, for Melville Island is prevailingly rocky; indeed, for wearing down runners the whole place might almost as well be paved with files and grindstones as with its native jagged, frost-broken rock. We did not positively remember, any of us, whether Bernier had made a cache at Winter Harbor in 1910, but for the sake of possible iron and kerosene we sent a sled there in October. We intended it should go to Dealy Island as well, for some of our men unfortunately had developed a taste for tobacco out of proportion to our resources, and it was supposed tobacco was to be had at Dealy Island. The team never went beyond Winter Harbor, however, for Bernier's cache there was found to contain, besides the iron shoeing for sleds and the kerosene (50 gallons) that were priceless to us, also several tons of foods such as pemmican (salty), beef extract (half of it rock salt), pilot bread, flour, pork, honey, preserved fruit, and in general the very assortment of foods which, while it does not invariably produce scurvy, is yet the common prelude to it. I had previously hoped that the Dealy Island cache might have its food all spoiled; this hope was now unavailing, for the Bernier cache contained several tons. The temper of our men was such that I did not try the experiment of keeping them on meat straight, but merely cautioned them to eat fresh meat at most or all meals. Neither did I allow more than a limited number of packages to be opened at either of our permanent camps, but on those sled trips where I was not myself present the amount of groceries consumed was at the men's discretion. I mention this here because it has a bearing on a serious thing that happened later.

Arrival of "Polar Bear" Party

The winter of 1916-1917 we fed in Melville Island seventeen persons and over forty dogs. By February most of the dried meat and fat had been collected at the Cape Grassy advance base or else been eaten up by men or dogs. On the last freighting trip there the dogs unfortunately lost much flesh through a miscalculation of the dog feed for the last return journey, and we lost ten days or so by waiting till they were in flesh again. By this time we had concluded that the *Polar Bear* had probably been wrecked the preceding summer, for had she remained where she had previously wintered a party from her should have arrived long before this. We were surprised, therefore, when a party from her actually arrived the last of February and astounded when we learned that she had suffered no damage but had sailed a hundred miles farther away from us instead of coming north and was now wintering at Collinson's old base, Walker Bay, Victoria Island. The details which led to that proceeding are too many and complicated to be related here. The main thing just now was that this party from her brought us five men and over twenty dogs but no dog feed and not nearly enough man food to provision the extra men as well as we were already provisioned, per capita. I made here a serious mistake. I should either have left these men and dogs in Melville Island or sent them right back to the *Polar Bear,* for, when we later ran out of food, it proved we lost more time at a critical stage in the hunting of fresh meat than we gained by the service of the fresh men and dogs. Had we had only our original sleds we could have left the Cape Grassy base with all teams hauling dried meat and fat only; as it was, three of our seven sleds had to haul green meat, which is heavy and inconvenient to handle when it is hard as a rock from frost. The *Polar Bear* party had brought us Primus stoves and additional kerosene. Those things added greatly to our comfort, though they did not tend proportionally, if at all, to increase our mileage.

Advance North of First Island

It was past the middle of March when the last sleds left the Cape Grassy camp, and by the first of April we had completed the survey (roughly) of what remained yet to do of our First Island to Cape Mamen and a few miles beyond (to the northwest).

It was now time to send back our first support party. I had wanted Karsten Andersen to be one of the advance party, but he now told me that he had been ill for some two weeks and was feeling more sluggish and weaker each day. On examination he proved to have symptoms of scurvy, but as I then thought he had been living all winter mainly on fresh meat I took his ailment to be pyorrhoea, together with some constitutional disorder. The first week of April from a point about 50 miles from land and 30 from the shore floe I sent back the support party, instructing Storkersen to take most of our people from Melville Island to the *Polar Bear.* Castel, accom-

panied by Andersen and four Eskimos, I instructed to proceed to the Cape Kellett base by way of the Bay of Mercy, Cape McClure, and Prince Alfred Cape, searching on the way for a party who, our men from the *Polar Bear* told us, had gone from Cape Kellett with mail for us in the early winter. No such party had reached us in Melville Island, and we feared misfortune had overtaken them.

Storkersen's Survey of Victoria Island Coast

Storkersen also had instructions to make up a party on his arrival at the *Polar Bear* and try to reach Amundsen's (Hansen's) farthest on the northeastern coast of Victoria Island. Although out of its chronological order, I shall say here that, through a slip, he made this journey without a map or other record of the mathematical position of Cape Nansen (Hansen's farthest) and that he did not know at the time of his turning back from the survey trip that his turning point was a few miles short of Cape Nansen. An additional reason for his turning back was the discovery of an island apparently considerably more than twenty miles in length lying north of the northeastern corner of Victoria Island. It appears that Hansen and Ristvedt just missed seeing this island. The coast line of Victoria Island is therefore now completed beyond the probability of the future discovery of any conspicuous geographic feature not already indicated either by Hansen or Storkersen. The land east of Wynniatt's farthest (Glenelg Bay) proves to run well to the north, thus forming a great bay having its western limit at Peel Point. This I have called Wynniatt Bay, and the strait separating Victoria Island from the new island to the northeast is Hansen Strait. A range of fine mountains lying roughly parallel to the northern coast of Victoria Island I have named Shaler Mountains.

On his way back Storkersen was compelled by the advancing thaws to abandon his sleds in Collinson Inlet and to cross Victoria Island thence to Walker Bay. This crossing had its own interest and had been recommended by me should time not allow a crossing from Hansen's farthest, which would obviously have been preferable. His party arrived at the *Polar Bear* about the end of July.

Ice Conditions in the Polar Sea

To resume the narrative of our own movements: At the shore floe we killed some seals, but in general game was not abundant, comparatively, on or in the sea north of First Island.

The journey north-northwest from Cape Mamen was of special interest to us, as the ice conditions were so markedly different from any we had seen before. In other years the ice had been of the mobile type described by Baron Wrangell and by Leffingwell and Mikkelsen, where no sane man would leave a cache expecting to pick it up on the return journey. But on the ice north of First Island a cache, if made, could probably be found.

When we eventually turned back we did not try to follow our old trail, though it is more than likely we could have done so. We learned nothing of the mobility of the ice under the influence of a north wind, for unfortunately none such blew while we were at sea, and such a wind may be capable of producing considerable motion in the ice; but a series of strong easterly and southerly winds produced a westing and a northing of about three miles only. This could all have been accounted for by the widening of the First Island and Isachsen Land shore lead, for that lead we have seen open four or five miles at right angles with the trend of the shore floe—i. e. northwest. This we noted in our journey along that lead in 1916. The same winds that gave us three miles of motion near 80° N. and 111° W. would have given thirty to fifty miles in the Beaufort Sea south of 74° N.

More than 90 per cent of the ice seen in 1917 north of First Island was either of the type termed paleocrystic or pressure ridges made of the younger ice that had formed in temporary leads and was now crushed into pressure ridges. There was terrific pressure both with and without local winds, but the great thickness of the paleocrystic ice (doubtless averaging over twenty feet) prevented its ridging extensively, though it cracked in all directions.

Submarine Relief

But perhaps the most striking thing observed was the character of the sea bottom. At the shore floe some fifteen miles from land the depth was 468 meters; ten or fifteen miles farther from shore it was 456 meters and ten miles farther still it was 444 meters. Then it started deepening till we had 570 meters about seventy-five miles from land, after which it gradually shoaled again to 502 meters at our farthest, which was near 80½° N. and 111° W. Later in the summer, when we ran a line of soundings across Melville Sound from Cape Providence to Peel Point and then to Point John Russell, we found the depth of that sound to be generally about 450 meters and that it deepened and shoaled irregularly much as our sounded area does northwest of First Island. Going north from Alaska the sea deepens roughly a fathom to the mile till about forty miles from shore, after which there is a steep slope to a depth of 1,386 meters with no bottom reached. The slope is more gradual west of northern Banks Island and west of southern Prince Patrick Island, but still in both those regions it goes below 1,000 meters in less than fifty miles from shore. In the region of First Island the deepening is 34 meters only in over a hundred miles of increased distance from land. On the west coast of First Island we found a depth of 70 meters in 1916 less than a quarter of a mile from shore and 250 meters three miles from shore, if I remember rightly. In that same sudden way does Melville Sound deepen away from Melville Island and Banks Island. In the summary of our work in the *Review* (March, 1918, p. 241) the view is advanced that it would seem that "no land exists west of the known limit of the American Arctic Archipelago." It seems to me

that that conclusion would have been much more strongly supported had we found a deep ocean northwest of our First Island and of Isachsen Land. But instead of a deep ocean we found a shallow sea which did not deepen materially as we left the known lands behind. In this connection the soundings of MacMillan northwest of Cape Thomas Hubbard would interest me greatly, but I have not yet heard what they were.

Tidal Observations

With reference to the theory by which Harris and others have inferred a land to the north of Alaska, our tide observations should prove of interest. We took ten-minute observations for more than twenty-four hours in each of the following places: Cape Isachsen, Hassel Sound, and the southern end of Third Island. All these have local time, determined instrumentally on the spot, and, as will appear later, the sounding places are "tied up" with Parry's observation spot at Winter Harbor. We also had tide observations taken for a month at Cape Kellett and for most of a winter in Prince of Wales Straits.

Return to Land with Scurvy-Stricken Men

I think it was in the last third of April that two of my three companions began to complain of illness. The men I had were Harold Noice and A. L. Knight, both from Seattle, and the Eskimo Emiu of Nome, Alaska, where he has a reputation (under the name of Split-the-Wind) as a long-distance runner. The sick men were the two whites, and their symptoms were those of scurvy. It was only now that I learned that they (as well as Karsten Andersen, already sent home sick) had been living half the winter mainly on the groceries of the Bernier cache. I was worried at this time also about my remaining companion, Emiu, for he, too, had lived much of the winter, I now learned, on groceries also. He was not stricken, however, perhaps because he had the last few weeks eaten a good deal of raw fresh meat, probably the best of all anti-scorbutics. The white men, not at that time realizing their imminent illness, had eaten little meat and none of it raw.

It was an uncomfortable situation to have two men out of four taken seriously ill over a hundred miles from land. Their disinclination to eating meat disappeared magically when they were confronted with scurvy and its associated dangers, but it happened that we had just finished feeding to the dogs the last seal meat shot some days before and were in a region where seals could not be expected to be numerous. Naturally they are to be found only in leads that run partly through ice formed not later than the preceding autumn, and now we were in an area almost exclusively paleocrystic. We, therefore, turned at once towards the nearest land, Cape Isachsen. I knew that should the shore lead there be open we could get seals and should it be closed we could proceed inland looking for reindeer. The advance of the scurvy seemed temporarily checked by eliminating pem-

mican and salt from the sick men's diet and substituting cereals and chocolate.

A gale at this period broke up the ice badly, and, as the weather was no longer cold enough, the leads refused to freeze over quickly, and we had to make numerous expensive detours to find crossing places. Before we were half way ashore the advance of the disease had compelled Noice to ride whenever the going was good, and the last few days he rode always, except when crossing actual pressure ridges or dangerous spots over thin ice. Knight was able to walk all the way to shore, and both men showed excellent spirit in being as useful as their rapidly lessening strength and increasing distress allowed. Emiu, the Eskimo boy, was excellent.

It was about the first of May that we landed south of Cape Isachsen, for the lead was not open at the edge of the landfast ice and stormy and cloudy weather prevented seals from basking on the ice. The first day of our following the coast southeast we saw not a single sign of reindeer. I followed our usual method of hunting inland parallel to the course of the sleds, which followed the coast from promontory to promontory. Both the sick men now rode. The dogs were getting tired from hard work every day for weeks. When we landed we had left for them only two slim meals, consisting of worn-out and other not pressingly needed boots and various skin clothes. For ourselves we had food for about six days at half rations. As we were several hundred miles from our vessels, with sick men and tired dogs, the situation would have been serious had we not been equipped to secure food as we went along. As it was, the chances were several to one that we could shoot something before our strength gave out.

And so it proved. The second day ashore I found fourteen reindeer and got them all. Three days later both invalids told me that nearly all their symptoms of pain and distress were gone and that when they lay still they felt well. They were, however, too weak to walk, their teeth were so loose as to be easily plucked out by the fingers, and their gums were of a consistency nearly approaching that of cheese or of the white of a hard-boiled egg and could be cut with a toothpick easily. Two weeks later the teeth were firm in their sockets, the gums were harder, though not back to natural firmness, and the men felt perfectly well and eager to be moving. When we started, however, they did not prove to be able to walk more than five miles a day for the first few days. The rest of the time they rode, for our dogs had gained strength by their rest and ample feeding on reindeer meat.

Sojourn in Isachsen Land

During our seventeen days in Isachsen Land we rated our watches, finding the rate to be practically what it was in the winter. We killed about thirty reindeer and saw a half dozen more. There are no muskoxen in any of the islands discovered by us nor in the Ringnes Islands, nor did we see the track of a bear from leaving the home camp in Melville Island

till reaching the south side of Ellef Ringnes Island on our way home. The reindeer are only half the size here of the Barren Ground caribou of the Horton River or Coppermine River country on the mainland, so we needed every pound of the meat we killed for ourselves and the dogs. In our hunting we made some corrections in the outline of Isachsen Land, which we found considerably narrower than indicated on Admiralty Chart 2118. It is also highly probable that the Dyrebugten and Dronning Louise Fjord are not two bays, as shown on the chart, but a strait separating Isachsen Land from Ellef Ringnes Island proper. It looked so to us from the high land of Isachsen Land, but there is a chance we were deceived by a fog. Certainly, were it not for Captain Isachsen's map we should, had we been the original discoverers, have set this down as a strait.

Southward by Way of Third Island and East Coast of Melville Island

From the southwestern corner of Ellef Ringnes Island we crossed to our Third Island but were unfortunate in finding no seal hole through which to sound. The ice was all of the paleocrystic type, and Emiu, who had crossed this sea in Castel's party the year before, recognized pressure ice previously seen, so we know this ice did not move in 1916. We also know that the ice between First Island and Melville Island moved neither in 1915 nor in 1916. It is clear, however, that this ice moves in certain seasons. The inner part of Hecla and Griper Bay thawed in 1916, but the outer ice did not move. Liddon Gulf was open in 1916, but its ice did not shift in 1915. Byam Martin Channel is undoubtedlly open every season, for its remarkably strong currents were already shifting the ice in early June, 1917, making a break-up in early July probable.

In 1916 we had spent 27 days at a point near the southern end of Third Island, where we had that year carefully rated our watches. We now secured a reliable observation at the same place, and by going directly thence to Parry Rock at Winter Harbor we "tied up" our observations with that well-located spot.

On our way south along the eastern coast of Melville Island we examined two cairns without finding any records, though no one has visited those places since the Franklin Search. On the southeastern corner of Melville Island and at various points on the southern coast we picked up records of the Bernier expeditions.

Evidences of Coastal Elevation

Bears, seals, muskoxen, and reindeer abound on the eastern coast of Melville Island. On the southern third of the east coast we found the skeleton of a moderately large bowhead whale several hundred yards inland and —as I remember it—twenty or thirty feet above sea level. From the embayed character and drowned valleys of the west coast of Banks Island it appears that that coast has sunk, though driftwood well above present

high water may indicate that a new elevating movement has commenced. But all our new islands as well as the Ringnes Islands show clear evidences of extensive elevation of coast lines, which still is in progress. A log of driftwood found on the southern coast of First Island is so much larger than any driftwood now found on the mainland coast that the presumption is it did not come from either the Yukon or the Mackenzie River system—at least, it could not have come from any forests now flourishing there. This log is some distance above present high water. Generally speaking, there is no driftwood in any of the islands discovered by us.

We found a tusk, but no other mammoth remains, in Melville Island. Crustacean fossils have been found in various islands. Formation of ground ice, as previously described in a contribution of mine to the *Bulletin of the American Geographical Society*,[1] was observed in active progress in various places, notably near Cape Isachsen, on the northwestern coast of Second Island, and in Hassel Sound. The elevated beaches in these islands are marked in part by hummocks originally formed by ice pressure that thrust tongues of ice into the beach and thus buried ice fragments there.

Across to Banks Island

We stayed three days at the Kellett-M'Clintock cache on Dealy Island. The new roof placed on it by Bernier was of no service for the same reason that the original roof was inadequate—the house is built near a cliff several hundred feet high, and the snow consequently piles over it to such a depth that the weight of it needs must crush any ordinary roof. On July 3 only the southeastern corner was seen sticking out of the snow bank, but three days of exceptionally hot weather revealed the whole house. About half the stores are still fit, and certain foods, such as currants in barrels, are better than any fresh we ever tasted. Keeping them, under the conditions of this cache, has improved them somewhat as a similar storing would improve wine.

From Cape Providence we crossed to John Russell Point, running a line of soundings across with an average depth of 450 meters and an abrupt sea bottom slope towards both lands. We reached Banks Island July 25 to find the ice in Prince of Wales Straits already in motion. Proceeding south along the coast we later found that the straits could have been navigated as far north as the excellent harbor at John Russell Point as early as the first week of August. From the remarkably ice-free condition of these straits in the summer of 1916 also, I judge that the Northwest Passage as discovered by McClure is no more hazardous or likely to be interrupted in Prince of Wales Straits or Melville Sound than it is in several other of its links, such as, for example, the rounding of Point Barrow.

A short way (about five miles) south of what probably is intended for

[1] Underground Ice in Northern Alaska, Vol. 42, 1910, pp. 337-345.

John Russell Point we found a copper cylinder containing a record signed by McClure saying, in substance, that from this point he had seen the waters of Melville Sound, thus discovering the Northwest Passage. The document had been written by someone other than McClure. It was dated aboard the *Investigator* in winter quarters in the spring of 1851 and had been sent to this point to record the discovery made the preceding autumn. The winter had been comfortable; there was no serious illness aboard; the cache on Princess Royal Islands is described; and a request is added that the record be forwarded to the Secretary of the Admiralty. The cairn for this record must have been solely of sand, for no vestige of it had been left by the strong winds that are frequent in this region. As the land does not conform well with the chart here, the discovery of this record was a remarkable accident—I was hunting reindeer and found it on the level north bank of a small stream about half a mile inland.

Corrected Position of Northeastern Cape

The record says that John Russell Point was located by lunar distances. The well-known uncertainty of this type of observation, especially if made but once and under the discomfort of cold weather, may account for the fact that our time observations here, when referred to Winter Harbor as given by Bowditch, place John Russell Point about a degree of longitude farther west than does Chart 2118. In conformity with this result, we found the northeastern corner of Banks Island to be far less peninsular in its outline than the chart indicates—the map makers seem to have stretched the land eastward to meet the requirements of an incorrectly determined longitude.

Interior Drainage of Banks Island

A comparative scarcity of game compelled us to abandon the coast after about fifty miles—otherwise we should have followed it south to Jesse Bay, crossing thence to Cape Kellett, for I should have liked to make a new survey of the coast. However, the overland journey had its compensations, for we found some large lakes that are the headwaters of the large river that enters the sea about six miles west of the Bay of Mercy. These lakes lie less than ten miles from the east coast of Banks Island, just north of the Princess Royal Islands. We can now locate with rough accuracy all the watersheds of Banks Island. The main one runs from just east of the Bay of Mercy to a point within about five miles from the eastern coast near the Princess Royal Islands and thence roughly to Nelson Head. By far the largest river is the one which in 1915 we traced from its mouth just west of the Bay of Mercy to where it is about 20 miles from the eastern coast a little north of 73° N. and the lakes of whose headwaters we have now found a little to the southeast. This gives a canoe route uninterrupted by serious rapids and deep enough for a small gasolene launch from within ten miles of the middle of the eastern coast of Banks Island to McClure Strait.

Coal on Banks Island

We had abandoned our two sleds near John Russell Point and were traveling with thirteen pack dogs at the rate of about ten miles per day, a common average under such conditions. In the interior of the island we discovered a coal mine. Captain Beneard had found coal afloat a year earlier near Cape Kellett, and there is probably a deposit to be found up one of the small stream beds there. Coal is also found at many points along the northern coast of the island. The deposit 80 miles east-northeast from Cape Kellett burns in the manner of thoroughly dry wood and with a fragrant smoke; the other deposits are real lignite of various degrees of excellence. We have specimens of coal from most of the deposits noted as well as of rock from several places in each of the islands discovered or visited.

Arrival at Cape Kellett

On arriving at Cape Kellett August 17 we found the *Mary Sachs* had been repaired and launched by Castel's party according to my orders but had later on been made unseaworthy and was now a wreck broadside on the beach. From two men, Otto Binder and Gustav Massik, to whom the remains of our Kellett base had been turned over as a trapping camp, we learned the surprising news that we had not been expected back at Cape Kellett that summer and that the *Polar Bear* and all our men had left Banks Island August 12, the captain saying the season was so late he did not dare to stay longer.

We learned, also, of a tragedy of the previous winter. Captain Peter Beneard and Karl Thomsen had attempted in the midwinter to carry mail to us in Melville Island and had lost their lives. Our search party had found the body of Thomsen but had not found Beneard or the mail. As no white person survived at Cape Kellett and Beneard had confided nothing to the Eskimos, we do not yet know why this trip was attempted, as my instructions to Beneard were that he was not to leave the Cape Kellett base and that no attempt should be made to bring us mail. Doubtless Beneard saw some special reason for not following those instructions, for he had through the whole expedition been one of our most faithful and trustworthy men.

Departure for Cape Bathurst and Herschel Island

It looked the latter part of August as if we were destined to be marooned on Banks Island. We should have suffered no want, for game is reasonably abundant, but through lack of equipment we should have been able to do no scientific work and the year would therefore have been tedious because unprofitable. The prospect was brightened the last days of August by the arrival of the trading schooner *Challenge,* which I promptly bought and with which we sailed inside the twenty-four hours. We had little hope of overhauling the *Polar Bear,* which now had two weeks the advantage of us.

But it later developed that her hurry to leave the Arctic had not been equal to her desire to get away from Cape Kellett and that she had gone to Cape Parry, had hunted caribou there for some days, and, on finding game scarce, had returned to Banks Island in the vicinity of Nelson Head, where several days were spent. As a result, we met her near Cape Bathurst the morning after we left Cape Kellett. The *Challenge* was now of no further use and I sold her at the Baillie Islands (Cape Bathurst).

The captain was discharged at the Baillie Islands and the mate at Herschel Island. John Hadley, who had been carpenter on the *Karluk* and second mate on the *Polar Bear* and had done his work on this expedition with exceptional fidelity, was now promoted to be captain, with Castel for mate and Massik for second mate. Storkersen's exceptional value as a field man had prevented me from making him an officer of any of our ships, for to us the work of the sleds and dogs was much more valuable than that of the ships, which so far had not succeeded in co-operating efficiently with the sled workers. The best base we ever had was that established by Wilkins and Castel with the *North Star* near the northwestern corner of Banks Island in 1915. The year before had been a much better ice season, but in 1915 she could not be taken farther north than Wilkins took her, for the ice north of that point was found by him unbroken and remained so till the freeze-up.

Herschel Island to Barter Island

We left Herschel Island about September 10. It had been a bad ice year. The whaler *Herman* under Captain Pedersen's competent direction had been able to proceed but a few miles beyond Cape Bathurst and the Hudson's Bay Company's *Macpherson* had taken the *Herman's* failure as conclusive and had not proceeded beyond their post at Bathurst. There was much scattered ice everywhere about Herschel Island; so darkness and fog interfered with our running at night. At the Alaska-Canada boundary Mr. Thomas Gordon of the trading post there told us that the *Herman* had left there some time before, much in doubt of her ability to get out of the Arctic. Mr. Gordon urged our not trying to get out, for he expected the freeze-up any day and we might get caught at an unsafe point on the coast. It now seems likely we should have had no difficulty in getting out, however, but for an unfortunate accident at Barter Island.

We arrived at Barter Island the evening of September 12 at the concomitant closing in of darkness and a fog. There was scattered ice and a strong north-northeast breeze. We decided to tie up in the Barter Island harbor till daylight of the 13th, as fog, darkness, and a high wind go badly together in the midst of ice.

Detention for Another Winter Through Grounding of Vessel

Towards morning, in the mate's watch, Mr. Castel called me and reported that within the hour the wind had shifted from the north-northeast to

southwest and was rapidly freshening to a gale. I directed him to call the captain, but before the captain reached the deck the vessel bumped bottom, and before we could do anything we were broadside on a shoal within the harbor. It was the opinion of both captain and mate that it was hopeless to try getting afloat till the wind slackened. It is, however, a well-known fact that a gale of this type is commonly preceded by several hours by a rise of tide, usually five feet or over in this region. So it had been now, and before the wind abated the tide had fallen sufficiently so that it was impossible to get afloat till there should be a second southwest gale. This did not come before September 26. By that time the vessel had been unloaded. By putting out both anchors and by the simultaneous use of propeller and winch we got afloat before that gale attained a high enough pitch to prevent our swinging the ship's nose against it. But I feared the time was now too late for a safe passage out, and so we stayed. I now think I was probably wrong in this and that the fall of 1917 was so especially late that we could have left Barter Island the last of September and reached the Pacific before the ice caught us. But in the average season, the last week of September is too late for an easy passage out, and this year we all were obsessed with the premonition of an early fall.

Plans for Spring Expedition

When once it was clear that we had to winter it became equally clear that we ought to do some exploratory work the coming spring, for here we were in fairly easy reach of the unexplored area, with a better equipment on hand or easily available than we had ever had before and many men drawing pay for work that would be purely non-productive unless we did some spring traveling. Of course there would be some added expense, but then we should have something to show for the money spent.

The plan I settled on was to go with all available equipment about 200 miles north from Cross Island, Alaska (148° W.). From here I would send home all but three or four men and two dog teams, select the thickest available ice cake, spend the summer in accumulating meat and blubber for winter, float where the ice listed till February or March, 1919, and then start for the nearest land. On the going home of our Southern Division in 1916 we had received good sounding wire and many needed instruments from them and were therefore in a position to take soundings and some other desirable observations, besides the astronomic, as we drifted from place to place.

Attack of Typhoid

To prepare for this work I went to the Mackenzie delta in the autumn to buy dogs, dried fish for dog food, etc. Meantime Castel maintained at Cross Island a sealing station to provide dog food, and Storkersen and Hadley prepared everything else needed at the ship—such things as sleds,

clothing, condensed rations for men and dogs, etc. I succeeded in buying in the Mackenzie delta (with the invaluable assistance of the Royal North West Mounted Police and the Hudson's Bay Company) some fifty of the best dogs we ever had. In every way our prospects looked excellent, when, the first week of January, with everything ready for a start out on the sea ice by the full moon of February, I was taken with typhoid of a severe form. I probably owe my life to being able to travel from Shingle Point during the first four days of my illness to the Police Barracks at Herschel Island, where I received the best care available from the police, from the missionary, and from every white man in the village.

Transference of Expedition to Storkersen

So soon as we realized it was typhoid (which was not till I was down with pneumonia complications after a partial convalescence) it became clear that Storkersen would have to take my place in the ice work. By this time the start had already been delayed for my expected recovery from what we at first took to be an illness of not very serious type, and it was not until after the middle of March that Storkersen finally left the land at Cross Island. I do not as yet know any exact details, but I believe he had ten good sleds with about five good and five average teams, in all about eighty dogs. There probably were about fifteen men, five or so of them Eskimos. The Eskimos of this part of the Arctic, however, can be used for the first support parties only, for two reasons: they are afraid of going far from land on the moving ice, and they are unwilling to live on meat only, which all those have to do who accompany the advance beyond the limit of the provisions hauled from home.

For the present Storkersen's chances of success look good. He has ten sleds against the three we had on the corresponding trip in 1914; most of his sleds are good ones, while only one of our three was good in 1914; his dogs average much better than ours, and he will be able to pick two six-dog teams at the last where each dog will be equal to our good ones of 1914, when the good dogs were only four in number.

It proved, however, that the plan of drifting for a year on the ice had to be abandoned when I could not myself go. I then expected that Storkersen would go about north to 74° N. and then west and south to Wrangell Island or Siberia, keeping about a hundred miles outside the *Karluk* drift track. I have received no report from Storkersen or Hadley since Storkersen left me ill at Herschel Island, but it is now rumored that instead of going north and west Storkersen plans to go north and east, perhaps to Cape Murray. This is entirely feasible, if he has as good luck as we had in 1914, for he got an earlier start and has better sleds and dogs, but there is the disadvantage of his having to cross areas we have already explored should he not be able to get beyond 76° N. Should he land on First Island or Prince Patrick Island before July 10 he should reach

Kellett before the end of August, in which case he will be picked up there by the Hudson Bay Company's *Macpherson,* which now aims each year to supply the new trading post Fort Bacon on Dolphin and Union Straits and therefore passes the south end of Banks Island twice a year. They will call at Cape Kellett in September or late August this year and pick up Storkersen's party, unless another vessel picks them up sooner. Two vessels that may call there are the *Herman,* which, I suppose, is still under command of Captain Pedersen, and Leffingwell's *Argo,* now owned by Mr. Samuel McIntyre.

Storkersen probably carries about 2,500 meters of sounding wire. He has three excellent watches besides the two we had before and is in every way better equipped than any of our parties previously have been.

Journey from Herschel Island to Fort Yukon

After being in bed at Herschel Island from January 13 to April 3 I finally left on that date for the Episcopal Hospital at Fort Yukon. This is the only hospital within five hundred miles of Herschel Island (as one must travel) and even the only place with either doctors or nurses. Mr. Henry Fry, the missionary at Herschel Island who had been doing all in his power for me, had finally arrived at the conclusion that I should probably not live through if I stayed there and that something else must be tried. Inspector Phillips of the Police had arrived at the same conclusion and now volunteered to undertake the superintendence of my preparations and my journey south should I want to go. I had wanted to go a week or ten days earlier, but had then been dissuaded from doing so by those who thought the journey might be beyond my strength. Now that all agreed I must go south, Inspector Phillips soon had the party ready, and under the charge of Constable Brockie we started on April 13 with two Eskimos and an Indian driving three sleds. Mr. Fry at first intended accompanying us, but, when the first day's journey showed no ill effects but on the contrary marked improvement in lower fever and increased appetite, he saw that he was not needed and turned back. It took us eleven days to the Porcupine River at the mouth of the Old Crow River.

A week or more before I left Herschel Island a party of three Indians from the Porcupine basin at the head of the Old Crow River came to the island to buy certain things from the Hudson's Bay Company's store there. I had heard before of the presence of a physician at Fort Yukon but did not know but the war or other conditions might have taken him away. One of the Indians offered to carry a message for me to Fort Yukon and to accompany the doctor thence to Herschel Island should he be willing and able to come. But at Herschel Island the opinion prevailed, and was even shared by me, that the doctor would probably not come. At the mouth of the Old Crow, Mr. and Mrs. Schulz of the trading post there told me from intimate acquaintance with Dr. Burke of Fort Yukon that he would


STEFANSSON'S AND MAC MILLAN'S RECENT EXPLORATIONS IN THE AMERICAN ARCTIC ARCHIPELAGO
Scale 1:9 500 000
Routes
Canadian Arctic Expedition Northern Division
Stefansson
Storkersen
Crocker Land Expedition
Mac Millan
Ekblaw
Base or winter quarters
All routes are approximate, and Stefansson's 1916 routes are conjectural
BEAUFORT SEA
BANKS ISLAND
VICTORIA ISLAND
MELVILLE I.
PRINCE PATRICK I.
McCLURE STRAIT
MELVILLE SD.
McCLINTOCK CHAN.
ELLEF RINGNES I.
AMUND RINGNES I.
1st new island
2nd new island
3rd new island
BATHURST I.
ALASKA
CORONATION GULF
Dolphin and Union Str.
PRINCE ALBERT SD.
Revised from THE GEOGR. REVIEW, MAR. 1918


MAC MILLAN'S
ORATIONS
ARCHIPELAGO
0 000
200
300 miles
rocker Land Expedition
Mac Millan
Ekblaw
quarters
oximate, and
are conjectural
GREENLAND
GRANT LAND
ELLESMERE ISLAND
AXEL HEIBERG I.
KANE BASIN
Ft. Conger
Robeson Chan.
Kennedy Chan.
Lake Hazen
Smith Sound
Etah
C. Isabella
C. Faraday
Boger Pt.
Sonders I.
Cary Is.
Clarence Head
C. Thomas Hubbard
Nansen Sd.
Greely Fiord
Bay Fiord
Eureka
Cape Southwest
NORWEGIAN BAY
JONES SOUND
NORTH DEVON
LANCASTER SOUND
BAFFIN I.
2nd new island
ISACHSEN LD. (island?)
C. Isachsen
570 m
502 m
456 m
C. Malloch
ELLEF RINGNES I.
AMUND RINGNES I.
Cape Mamen
1st new island
C. Murray
C. Mackay
King Christian I.
St., July 1916
Mac M. Apr. 19, 1916
NORTH CORNWALL
3rd new island
C. Beuchat
Finlay I.
Paterson I.
C. McClintock
PRINCE PATRICK I.
Lands End
C. Grassy
Hecla & Griper B.
Byam Martin Ch.
BATHURST I.
CORNWALLIS I.
MELVILLE I.
Liddon Gulf
Dundas Pa.
Dealy I.
Winter Har.
C. Providence
C. Ross
McCLURE STRAIT
BARROW STRAIT
NORTH SOMERSET
MELVILLE SD.
PRINCE OF WALES ISLAND
450 m
1286 m
Prince Alfred C.
"North Star" 1915-17
Norway I.
C. McClure
Bay of Mercy
Wilkins R.
BANKS ISLAND
Russell Pt.
Peel Pt.
Wynniatt Bay
Hansen St.
SHALER MTS.
McCLINTOCK CHAN.
Collinson Inlet
Armstrong Pt.
"Polar Bear" 1915-16
Princess Royal Is.
Prince of Wales Str.
Cape Kellett
"Mary Sachs" 1914-17
Cape Nansen
BOOTHIA PENA
"Polar Bear" 1916-17
Walker B.
Minto Inlet
VICTORIA ISLAND
De Salis Bay
Nelson Head
Baillie Is.
C. Bathurst
C. Parry
PRINCE ALBERT SD.
KING WILLIAM I.
Dolphin and Union Str.
Anderson River
Horton River
CORONATION GULF
April 1914
May 1914
June 1916
April 1917
May 1917
June 1915
July 1915
Sept. 1914
Febr. 1915
Aug. 1915
Jan. 1916
Aug. 1917
Dec. 1915
Dec. 1914-Jan. 1915
Sept. 1915
Oct. 1915
July 1917
March 1917
April 1916
130
120
110
100
90
80
70
60
80
75

go to Herschel Island or anywhere else to help anyone seriously ill. I learned here also that my Indian messenger had been traveling down the Porcupine too slowly to suit the white men of that country, and that one of these, Mr. Harry Anthony, had with his better dog team taken the Indian's place and carried my letter to Fort Yukon. I was told that Mr. Anthony would have arrived at Fort Yukon by now and that if I waited the doctor would soon be at the Old Crow and if I kept on I should meet him on the road. As the journey seemed to be doing me good I decided to go on. And indeed at Old Rampart House we met Dr. Burke and his party. They were bound for Herschel Island to spend the summer there or return sooner, as circumstances demanded.

On meeting us, Dr. Burke turned back and we proceeded leisurely towards Fort Yukon. On the way there we were overtaken by the Reverend Hudson Stuck, Archdeacon of the Yukon, who was returning from a journey to Point Hope and Point Barrow and who had reached Herschel Island a day after we left there. We arrived at Fort Yukon on April 27, where my convalescence proceeded satisfactorily at the St. Stephen's (Episcopal) Hospital.

As we expect vessels that must go to Banks Island anyway to pick up Storkersen's party if they come to Cape Kellett, my orders provide that Captain Hadley shall bring the *Polar Bear* to Nome so soon as ice conditions allow. If health permits, I may meet her there in August or September, or I may come south direct. In either case the vessel will probably proceed to the Esquimalt Navy Yard at Victoria, British Columbia.[2]

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[2] Press despatches reported the arrival of Stefánsson on September 18, at Vancouver, B. C., on his way east. He will lecture before the American Museum of Natural History and the American Geographical Society on October 31.—EDIT. NOTE.